USER GUIDE TO X25 SERVICES AT CERN.

(EXTASE USER GUIDE.)
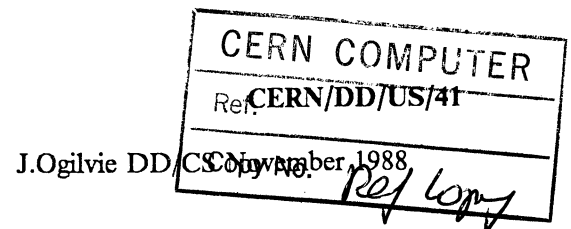
INTERNATIONAL PUBLIC PACKET-SWITCHED NETWORK ADDRESS OF CERN

IBM (CERNILM): Wylbur or VM — line mode only   (0)2284681140520

INDEX (CERNXFS): Fullscreen (Character mode)   (0)2284681140512

INDEX (CERNXLM): Original service — line mode   (0)2284681140510

VXCERN: Central VAX Service   (0)2284681140550

Note: CERNILM, CERNXFS, CERNXLM and VXCERN are proposed as logical names for these services.

Periods Reserved for Installation and Maintenance

Tuesday   : 7.30-9:00

Periods with Technician on Duty

Monday/Friday   : 08:30-17.30

Important Telephone Numbers and Electronic Mail addresses.

Service Problems: Computer Operations   4927

Service Information: User consultancy office   4952 UCO@CERNVM.CERN

User Registration & Accounting: User consultancy office   4952 UCO@CERNVM.CERN

CONTENTS

1. INTRODUCTION.

X25 Networks support various types of services:

- Terminal Access.
- File Transfer.
- Electronic Mail etc.

This guide explains how users located either at CERN or externally can access a remote computer or service from their local terminal via X25.

To connect to a remote computer via an X25 packet switching network your terminal must be connected via a PAD (a packet assembler/disassembler which transforms streams of characters into data packets to be sent accross the network — and vice versa). This function may be provided by your local host computer or a public[1] or private PAD.

The destination address which is known as the DTE (Data Terminal Equipment) number is formed in a similar way to an international telephone number.

CERN has access to 2 types of X25 Networks:

- the public X25 Networks, operated by the PTT's (e.g. In Switzerland, the national PTT Network is called Telepac.)
- the private HEP − CERN X25 Networks, operated by the HEP community.
  Currently to FAENET (Spain), ESNET (USA), INFN (Italy), JANET (UK), L3NET (USA), PHYNET (France), and UNIGE (Switzerland).

Note that calls via a leased line are not charged whereas calls via the Public networks are charged (depending on destination, volume and duration) either directly to the caller or to the manager of the host computer.

2. HEP − CERN X25 ADDRESSING SCHEME.

In November 87, an agreement was reached with the operators of the private X25 HEP networks connected to CERN by leased lines to adopt the CCITT X121 addressing scheme.[2] This scheme is used to address CERN hosts and services via the Public Packet Switched Networks (PPSN) and is now also used to address these hosts and services via leased lines. The old ad hoc scheme is no longer supported.

Viz. to call a CERN host via a public network the address (DTE number) has the form
P22846811405xx
where P is the prefix required for international access and is normally 0.
xx identifies the CERN host or service
to call a CERN host via a leased line the address has the form
22846811405xx
i.e. the prefix(P) is simply omitted.

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[1] Normally provided by the national PTT administration and generally accessible via a telephone dial up call.

[2] For more complete information see note CERN/DD/CS − G36: HEP − CERN X25 (See M. Monnet DD/CS).

Similarly hosts on most X25 networks connected to CERN can be addressed using their public X121 address. See Appendix C for more complete information.

3. ACCESS TO EXTERNAL HOSTS FROM CERN.

As has already been announced, the existing XXX service, which runs on old and unreliable hardware, will be phased out early in 1989. Information on how to use this service is to be found in Appendix D.

Users are encouraged to use one of the following alternatives:

- **The new X29 service for calls via leased lines.**
- **The PSI PAD service on the central VAXes for calls via public networks and leased lines.**

Note:

1. To use the PSI PAD under VAX VMS it is not necessary to learn a new operating system but only a few commands (see below).

2. For VM users no general PAD facilities are currently available, but possibilities are being investigated. (The existing PAD facility on VM only allows access to Janet (Coloured Book) hosts and is not supported by CERN.)
   However, a limited number of IBM VM sites, connected to CERN by leased lines, can be accessed via the command DIAL NET which must be typed before logging in to CERNVM. (A list of possible nodes will be displayed.)

3.1 The X29 Service.

3.1.1 Introduction

A new X29 service is now available for access to remote hosts/services on networks connected to CERN by X25 leased lines. Presently there are leased lines to CIEMAT (E), INFN (I), IN2P3 (F), FNAL (USA), JANET (GB), LAPP (F), L3NET (USA), SACLAY (F), and UNIGE (CH). (See the on−line help service for the current list of leased lines.)

N.B. For access to hosts on the JANET network users may also use the Rutherford PAD on Index class 23, where logical names are defined for the most popular JANET hosts.

3.1.2 To Connect.

Logon to Index class X29 in the standard way and after the Enter Class prompt
type **X29** followed by **RETURN**

and after the CLASS START message
Hit the **RETURN** key twice (for speed selection).

The PAD will provide the following prompt and instructions for use:

Extase Pad:

To access hosts on networks connected to CERN by X25 leased lines

type CALL followed by either:

- the leased line name followed by the subaddress of the host
- or the full DTE number

e.g. to call the VAX_UNI2A at the University of Geneva

Type **CALL UNIGE.10 (or CALL 2284682161310)**

Type **HELP ADDRESS** for a list of leased line names and **HELP X29** for more information.[3]

3.1.3 Network Addresses.

The correspondance between the leased line name and the network addresses is given below:

CIEMAT   21452120250XXX
INFN   2222511072XXXX
IN2P3   2080691101XXXX
JANET   0000XXXXXXXXXX
LAPP   208069110109XX
L3NET   311021300219XX
SACLAY   2080911101XXXX
UNIGE   22846821613XXX
FNAL   1100XXXXXXXXXX

where XXX corresponds to the subaddress of the host (or service) on the network.

Examples:

CALL IN2P3.1841	to call the Central IBM (VM) service at CC – IN2P3 Lyon.
CALL SACLAY.2541	to call the Central IBM (VM) service at DPHPE Saclay.
CALL INFN.91	to call the HEP VAX at Milano.
CALL L3NET.99	to call the HEP VAX at CALTECH.

Appendix C gives an incomplete list of logical host names and DTE addresses of hosts on networks connected to CERN by leased lines.

3.1.4 To Disconnect

1. Perform logoff procedure on the Remote Computer. This will normally cause disconnection with the message
   Call duration hh.mm.ss   Packets out: xx   Packets in: yy
   * * * cleared

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[3] A more complete HELP service and a list of logical names for the most popular network hosts will be implemented with the new software release, expected by the end of 1988.

This is the recommended procedure.

2. Alternatively the user may escape to PAD command mode (see below) and type **CLEAR**.

The Index line is dropped when a call is cleared. To avoid this happening you may logon to the PAD by typing **LOGON A A** and typing **LOGOFF** when finished.

3.1.5 PAD Parameters.

1. The default local PAD parameters are set for line (message) mode. The required parameter setting should be set by the remote host (or service).[4]
   e.g. for full screen mode of operation the remote host PAD should change the local PAD parameters to character (native) mode.
   (If this is not possible, the local (CERN) PAD could be programmed to set the parameters explicitly for a specific destination − if requested by the manager of the remote host or network.)

2. To display the current setting of the PAD parameters (terminal description and operating style)
   escape to command mode as explained above and type **SHOW TERM**.

   Parameters may also be changed from the terminal − but this should not normally be necessary.

See Appendix A for more complete information re PAD parameters.

3.1.6 To escape to PAD command mode:

Type **CTRL P** followed by **A**
type

RETURN to reconnect.

3.1.7 Use of Break Key.

The default PAD parameter setting is that Break is ignored.
N.B. Break is normally used by the CERN terminal server to escape to local mode (and not transmitted to the PAD).

3.2 The VAX PSI PAD Service.

3.2.1 Introduction.

For calls to external hosts only reachable via X25 Public Packet Switching Networks (e.g. Telepac in Switzerland) the PSI PAD facility on the Computer Centre VAX cluster (VXCERN), or on your private host if it has X25 access, is recommended.

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[4] This is compatible with the CEN/CENELEC functional standard ENV 41901 (Y11).

Users who wish to have an account on the CERN Central VAXes (VXCRNA/B) should contact their VAX group Administrator. If your group does not already have a VAX account then please contact the UCO (User Consultancy Office) to arrange this. A system of retroactive accounting bills calls to the user's group account. (On other VAXes the billing is done on a host level.)

Notes.

- To access VAXes on the HEP – DECNET, which includes most of the VAXes whose logical host name is indicated in Appendix C, it is not necessary to use the PSI PAD service but simply **SET HOST HOST_NAME**. However, if the DECNET connection is routed through many nodes the PSI PAD connection may be more efficient.
- A rather comprehensive on line HELP facility is available by typing **HELP PSI SET**.

3.2.2 To Connect.

Logon to the host (e.g. VXCERN) and type

set host/x29 DTE_number

where **DTE_number** is the destination number (which would be specified when using the XXX service but without the P. prefix).

e.g. to call the Central IBM Service at DPHPE Saclay.

set h/x 20806911012541   – to call via the leased line.
set h/x 020806911012541   – to call via the Public network.

To access hosts, from VXCERN, which do not set the parameters for full screen mode of operation the keyword **/profile = full_screen** should be appended.
The command string may be defined as a DCL symbol in your login file (login.com).

e.g. **DESY: = =   set host/x29 0262454000090582 /profile = full_screen**
and the command executed by typing **DESY**

3.2.3 To disconnect

1. Perform logoff procedure on the Remote Computer. This will normally cause disconnection with the message: –
   %PAD – I – CLEAR, Call being cleared at the request of remote DTE.
   This is the recommended procedure.

2. Alternatively the user may escape to PAD command mode by typing **CTRL P** and (after the PAD prompt appears) typing **CLEAR**.

3.2.4 To record the terminal session.

All data sent and received during the PAD session may be recorded on a log file (DEFAULT = PSIPAD.LOG) by appending the keyword /LOG to the SET H/X command.
This file may then be edited or printed. (e.g. XPRINT PSIPAD.LOG)

3.2.5 PAD parameters.

1. The default parameters are set for line (message) mode. The required parameter setting should be set by the remote host (or service).[5]
e.g. for full screen mode of operation. the remote host PAD should change the local PAD parameters to character (native) mode
VMS hosts normally set the paramaters for full screen, however if this is not done PSI PAD allows the parameters to be set explicitly — either in the command string or by defining a profile (see example below).

2. To display the current setting of the PAD parameters
escape to command mode as explained below and type **SHOW PAR.**
Parameters may also be changed from the terminal — but this should not normally be necessary.

See Appendix A for more complete information re PAD parameters.

4. ACCESS TO CERN.

4.1 To connect to CERN.

You may connect either:

- via the Public Packet Switched Networks (PPSN)
- or via the private X25 networks connected to CERN via X25 leased lines

From your terminal follow the local procedures to make an X29 connection.

The CERN DTE address is

- P22846811405XX — via the public network.
- 22846811405XX — via a private leased line (with the exception of JANET which uses 00000900300XX).

where P is the prefix required for international access via a PPSN[6]
and is generally 0
and XX is the subaddress of the host or service — see Appendix C.

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[5] This is compatible with the CEN/CENELEC functional standard ENV 41901 (Y11).

[6] To call CERN from Switzerland the prefix 0 is also required (or the 228 must be omitted)

4.2 There are 4 supported services :

1. CERN IBM: Service 20   – line mode only   (CERNILM)   (0)2284681140520

2. CERN INDEX: Service 12 – full screen mode   (CERNXFS)   (0)2284681140512

3. CERN INDEX: Service 10 – line mode   (CERNXLM)   (0)2284681140510

4. Direct Access to a host computer on the CERN X25 Network.
   e.g. to access the Central VAX VMS Service   (VXCERN)   (0)2284681140550

4.3 Recommendations for the major systems

VAX/VMS – – > method 4 if it exists else 2 (service 12)

UNIX   – – > method 4 if it exists else 2 (service 12)

IBM/VM – – > method 2 (service 12)

IBM/MVS – – > method 1 (service 20)

Note. Service 10 is only recommended for access in line mode to non – IBM hosts NOT on the CERN X25 network.

4.4 Access to a Host on the CERN X25 Network.

The addresses of hosts on the CERN X25 network are given in Appendix C. These are almost all VAX Computers running VMS. By default, VMS sets the remote PAD parameters for full screen mode of operation.
To revert to line mode (when you are logged on to the CERN VMS host) you can type

      set term /local. (See Appendix A for more information re PAD parameters.)

From your terminal follow the local procedures to make an X29 connection and specify the DTE number of the CERN host.

e.g. The CERN DTE address of VXCERN is

- P2284681140550 – via the public network.
- 2284681140550 – via a private leased line (with the exception of JANET which uses 0000090030050).

where P is the prefix required for international access via a PPSN and is generally 0.

The Host will prompt for user name and password.

4.5 Access to CERN IBM: Wylbur or VM − line mode only.

From your terminal follow local procedures in order to connect to CERN.
The CERN DTE address is

- P2284681140520 − via the public network.
- 2284681140520 − via a private leased line (with the exception of JANET which uses 00000090030020).

   where P is the prefix required for international access via a PPSN and is generally 0

You will receive the prompt: enter w for wylbur or v for vm

Type: **w or v** <CR> Now proceed to login to Wylbur or VM in the normal way.

4.6 Access to CERN INDEX: Service 12 (especially for full screen).

From your terminal follow local procedures in order to connect to CERN.
The CERN DTE address is

- P2284681140512 − via the public network.
- 2284681140512 − via a private leased line (with the exception of JANET which uses 0000090030012).

   where P is the prefix required for international access via a PPSN and is generally 0

and give a first <CR>
to get the prompt from the INDEX system

Prompt: WELCOME TO PACX n n:1,2
Prompt: enter class (PACX 1,2)

You are connected to INDEX (PACX 1,2).

Type: ccc <CR>
   where ccc is the INDEX class of the host (either a mnemonic or a number).
Prompt: class ccc start

You are connected to the CERN INDEX host computer.

   See Appendix A for details of PAD parameter settings.

4.7 Access to CERN INDEX: Service 10 (line mode)

   For those special cases, where hosts only reachable via INDEX (i.e. not directly connected to the CERN X25 Network) have to be accessed in line mode this service has been retained.

   To access this service follow the procedure above for Service 12 but append the subaddress 10 (in place of 12) to the CERN address.

4.8 The Terminal Type.

The CERN host will prompt for terminal type (after the user name and password has been entered correctly) and will provide a list of supported terminal types.
An increasing number of terminals have a VT100 and often VT200 compatible mode corresponding to terminal types D1 and D2. A VT100 emulator is available on IBM PCs and Macintoshes.

Consequently, most users (including users of the French Minitel) should specify terminal type D1. Note: When accessing CERN hosts in line mode via Service 10 or 20 a double echo may occur due to the echo by the PAD and the host. The host echo on VMS systems can be disabled by specifying the terminal type followed by X — e.g. D1X.

4.9 If things go wrong!

1. No connection possible

   There may be a network problem or all lines from the CERN PAD to INDEX with your desired baud rate are in use. Try again later or contact your local network expert.

2. Unexpected disconnection by the CERN side:

● During an access to the INDEX computer:
   The INDEX class was typed too late (INDEX time-out) — you did not give the required < CR > to INDEX system , just after the call establishment.
● During a session:

   If you are receiving a listing, the reason may be a temporary congestion of the network. This causes an overflow in the PAD and consequently a disconnect across the networks.

3. Strange session characteristics:

   Check the parameters of your local PAD and contact your local network expert for assistance.

APPENDIX A

PAD PARAMETERS (CHARACTER AND LINE MODE).

The 1984 version of the CCITT recommendation X3 stipulates a set of 22 parameters that a PAD may use to identify and control each terminal communicating with it. However, a default profile is normally used and only a few parameters need be changed when switching from one mode of operation to another. The 2 principal modes of operation are:

- Message mode (or line mode)
  Terminal input is line-oriented. The Terminal-PAD performs character echoing and, if possible, editing and forwards the line when < CR > is typed. This mode is the most economical in the use of the connection from the Terminal-PAD to the host.

- Character or full screen mode (or native mode)
  To work satisfactorily in full screen[7] mode, typed characters must be sent directly to the host (or after a short timeout) and character echo and editing provided by the host. In this case the X3 parameters are set as for Service 12 (below). This mode carries a certain overhead on the connection from the Terminal-PAD to the host.

PAD operation can be changed either

- by the user from his terminal − see your local PAD expert.
- by the remote host.

CERN hosts or CERN access points to Index (called reverse PADS) set the remote terminal PAD parameters as explained below.

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[7] The term "full screen" in the X29 context should be distinguished from the term as used under VM (e.g via Index classes 101 and 125) to indicate that the full screen is updated one full screen at a time after hitting the RETURN (or ENTER) key.

Access to CERN INDEX — Service 12.

As already mentioned the default PAD setting is for full screen mode of operation i.e. when a call is connected the CERN "reverse" Pad will set the terminal PAD (connected to the user terminal) to character mode.

The parameters are set as follows:

Parameter Number	Description	Value	Meaning
2	Echo	0	no echo
4	idle timer	1	50 msec
7	break handling	21	send interrupt/break
9	padding after CR	0	no padding
10	line folding	0	no line folding
13	linefeed insertion	0	no insertion
14	linefeed padding	0	no padding
15	editing	0	no editing

Access to CERN EXCITE hosts.

Most CERN X25 hosts are Vaxes (or micro Vaxes) running VMS. By default, the VMS reverse Pad sets parameters 2,4,10,14,15 as above — for full screen mode of operation.

Access to CERN IBM — Service 20.

The IBM (reverse PAD) software sets the X3 parameters for message mode of operation as follows:

Parameter Number	Description	Value	Meaning
1	Pad recall	1	not possible
2	Echo	1	echo (by Pad)
3	Data forwarding characters	126	all characters in cols. 1,2 of IA5.
4	idle timer	0	no timer
5	Flow control by Pad.	0	no flow control
7	Break action	21	send interrupt,break and discard output.
12	Flow control by terminal.	1	X − on X − off control
13	linefeed insertion	0	no insertion (by Pad).
15	Pad editing	1	On: using pars. 16,17,18
16	Delete character	127	Delete character
17	Line delete	24	Delete line
18	Display line	18	Display the line

Access to CERN INDEX — Service 10

The CERN Camtec (reverse) PAD will not attempt to set the remote PAD parameters (connected to the user terminal). It is assumed they are set for line mode.

APPENDIX B

X121 ADDRESSING AND PUBLIC NETWORKS CHARGES.

X121 addressing.

The CCITT recommendation X121 establishes a standard numbering system, for all countries' networks and individual user equipment on the network, similar to the hierarchical address space of international telephone numbers.

The full address (sometimes referred to as the NUA — Network User Address) may contain up to 14 decimal digits, where the first 3 are the data country code (DCC) and the next one is the network number. These 4 digits are commonly known as the DNIC (Data Network Identifier Code) and are listed below for those national networks accessible from the Swiss network Telepac.

The division of the remaining 10 digits is not specified by X121.

A one digit prefix (generally 0) is added for international calls via the public networks.

Charges.

Calls from CERN via the public network are charged by duration and by volume of data transferred. The number of bytes of data transmitted in a packet is measured in segments where 1 segment is less than or equal to 64 bytes (i.e. 1 − 64 bytes = 1 segment, 65 − 128 bytes = 2 segments etc.)

Examples of the current tariffs (in Swiss currency) via Telepac are given below:

Switzerland	1 cts/minute	30 cts / 100 segments
Europe	6 cts / minute	40 cts / 100 segments
N.America	15 cts / minute	1.0 fr. / 100 segments
Other regions	25 cts / minute	1.5 fr. / 100 segments

Table 1
TELEPAC INTERNATIONAL TRAFFIC (01.03.1988)

Country	Network Name	Data Network Identification Code (DNIC)
Allemagne, Rep.fed.d'	Datex – P	2624
Antigua	in preparation	
Argentine	UDTS [1]	incoming traffic only
Australie	Austpac Midas	5052 5053
Autriche	Datex – P Radio – Austria	2322 2329
Bahamas	en prepararion	
Bahrein	IDAS	4263
Belgique	DCS	2062
Bermudes	IDAS	incoming traffic only
Bresil	Interdata	7240
Cameroun	in preparation	
Canada	Datapac Infoswitch Teleglobe	3020 3029 3025
Cayman (iles)	in preparation	
Chili	Tymsat	incoming traffic only
Colombie	Dapaq	incoming traffic only
Coree, Rep. de	Dacomet	4501
Costa – Rica	in preparation	
Cote d'Ivoire	Sytranpac	incoming traffic only
Danemark	Datapak	2382
Egypte	in preparation	
Emirats Arabes Unis	TEDA	4243

Country	Network Name	Data Network Identification Code (DNIC)
Espagne	Iberpac	2145
	NID	02141
Etats – Unis	Autonet	3126
	Geisco Marknet	3136
	ITT: UDTS [1]	3103
	Datel	3107
	MCII: Data	3102
	RCA: LSDS[2]	3113
	Telenet	3110
	Tymnet	3106
	Uninet	3125
	WUI: DBS[3]	3104
	WUTCO:PTN – 1	3101
Finlande	Finnpak	2442
France	Transpac	2080
Gabon	Gabonpac	incoming traffic only
Grece	Helpac	2022
Guadeloupe	Dompac	3400
Guatemala	in preparation	
Guyane francaise	Dompac	incoming traffic only
Hawai	in preparation	
Honduras	in preparation	
Hongkong	Idas	4542
Hongrie	PCTO	2161
Indonesie	in preparation	
Irlande	Eirpak	2724
Israel	Isranet	4251
Italie	Itapac	2222
	Italcable	2227
Jamaique	in preparation	
Japon	DDX – P	4401
	Venus – P	4408

Country	Network Name	Data Network Identificator Code (DNIC)
Luxembourg	Luxpac	2704
Malaisie	in preparation	
Martinique	Dompac	3400
Mexique	Telepac	3340
Monaco	Transpac	2080
Nouvelle Caledonie	in preparation	
Norvege	Datapac	2422
Nouvelle – Zelande	Oasis/Pacnet	5301
Panama	in preparation	
Pays – Bas	Datanet – 1 Dabas	2041 2044
Perou	in preparation	
Philippines	UDTS[1] LSDS[2] ETPI	incoming traffic only
Polynesie francaise	in preparation	
Porto – Rico	UDTS[1]	incoming traffic only
Portugal	Telepac	2680
Reunion	Dompac	6470
Royaume – Uni	PSS	2342
Singapour	Telepac	5252
Sudafricaine, Rep.	Saponet	6550
Suede	Datapak	2402
Taiwan	UDAS	incoming traffic only
Thailande	PDSS	incoming traffic only
Trinidad et Tobago	in preparation	
Vierge (iles)	in preparation	

1) UDTS = Universal Data Transfer
2) LSDS = Low Speed Data Service
3) DBS = Data Base Service

APPENDIX C

CERN – HEP X25 ADDRESSES.

The names of CERN host and services accessible via X25 are listed below, followed by a partial list of the names of host and services on the networks connected to CERN by leased lines (as provided by our colleagues in the connected networks).

The CERN DTE address is

- P22846811405XX via the public network.
- 22846811405XX   via a private leased line (with the exception of JANET which uses 00000900300XX).

where P is the prefix required for international access via a PPSN[8] and is generally 0, and the subaddress XX is defined as follows:

General Services		Subaddress
CERNLM	Index in Line Mode	10
CERNFS	Index Full Screen Mode	12
IBMLM	IBM VM or Wylbur in line mode	20
VXCERN	Central Vax Cluster (VXCRNA/VXCRNB)	50
(VXCRNA	VXCRNA	53)
(VXCRNB	VXCRNB	51)

Hosts		System manager	Subaddress
VXL3	L3 Test Beam	R.MOUNT	33
UXINFN	DECNET ROUTER	D.HEAGERTY	34
VXGIFT	GIFT VAX	C.ISNARD	35
VXP173	P173 VAX	W.BRUECKNER	36
UXNHD	NMC/NA37 OFFLINE	W.BRUECKNER	360
UXHYPM	WA89/OMEGA ONLINE	W.BRUECKNER	361
UXHYPD	WA89/OMEGA ONLINE	W.BRUECKNER	362
VXL3TD	L3 VAX	R.MOUNT	37
VXALBM	ALEPH BEAM MON	W.VON RUEDEN	42
VXMERL	MERLIN VAX	D.MYERS	44
APDMO1	Apollo Domain 1	A.PETRILLI	#
NDUA6	UA6 NORD	D.RUEGGER	54
NDTIS	TIS NORD	T.SHAVE	#
VXNA31	NA31 VAX	K.PEACH	#
VXL3MU	L3 Muon VAX	R.MOUNT	62
UXNMC	NMC VAX	W.BRUECKNER	63
UXNMCD	NMC/NA37 ONLINE	W.BRUECKNER	630
UXNMC1	NMC/NA37 OFFLINE	W.BRUECKNER	631
UXNMC2	NMC/NA37 OFFLINE	W.BRUECKNER	632
UXNMCE	NMC/NA37 ONLINE	W.BRUECKNER	639
VXISOL	ISOLDE VAX	H.GABELMANN	72

contact system manager for DTE address.

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[8] To call CERN from Switzerland the prefix 0 is also required (or the 228 must be omitted)

X25 Leased Line Connections to CERN.

The HEP Networks/Sites connected to CERN by leased lines are listed below followed by a incomplete list of hosts and services on these networks. In future, this information should be accessible in an on–line database and eventually via a HEP directory service.

Name	Connected To	Network
CIEMAT	Madrid Spain	FAENET
FNAL	FNAL Chicago USA	ESNET
INFN	Bologna Italy	INFNET
IN2P3	Lyon, France	PHYNET
JANET	Rutherford England	JANET
LAPP	Annecy, France	PHYNET
L3NET	MIT Boston USA	LEP3NET
SACLAY	Saclay, France	DPHPE
UNIGE	University of Geneva	UNIGE

X25 leased line connections are ordered to NIKHEFH Amsterdam, and PSI Zurich.

CIEMAT: The DTE address is 21452120250XXX where XXX is defined as follows:

Host		Subaddress
EJENVX	CIEMAT VAX 11/785	22

FNAL: The DTE address is 1100XXXXXXXXXX where XXXXXXXXXX is defined as follows:

Name	System	Subaddress
UCSD	U. OF CALIF. AT SAN DIEGO VAX	110100800
IGW	LBL VAX	100100801
MFEX25	MFE MICROVAX AT LLNL	100100800
SCRI2	FLORIDA STATE CLUSTER VAX	150100700
BNLCL3	BNL CLUSTER VAX	140100700
BNLCL2	BNL CLUSTER VAX	14010070012
BNLCL1	BNL CLUSTER VAX	14010070011
FNMFE	FNAL MFE MICROVAX	12010070
FNNET	FNAL DATA COMM. MICROVAX	120100703
FNALA	FNAL CLUSTER VAX	120100704
FNALB	FNAL CLUSTER VAX	120100705
FNALC	FNAL CLUSTER VAX	120100706
FNALD	FNAL CLUSTER VAX	120100707
FNALE	FNAL CLUSTER VAX	120100708
FNALF	FNAL CLUSTER VAX	120100709
FNALG	FNAL CLUSTER VAX	1201007010
FNALH	FNAL CLUSTER VAX	1201007011
FNALI	FNAL CLUSTER VAX	1201007012
ANLHEP	ARGONNE LAB. VAX	12010060110
MICH	UNIV. OF MICHIGAN VAX	12010072
FNALPS	FNAL PORT SELECTOR PAD	1201001100
FNALPS2	FNAL PORT SELECTOR PAD	1201001200
LBLPS	LBL PORT SELECTOR PAD	1101001001
SLACPS	SLAC PORT SELECTOR PAD	1102001000
BNLPS	BNL PORT SELECTOR PAD	1401001000

INFN:The DTE address is 2222511072XXXX where XXX is defined as follows:

Host (DECnet node name)		Subaddress
INFNGW	Cnaf	2xxx
VXCNAF	Cnaf	9001
VAXMI	Milano	9022
VAXTO	Torino	9014
ITNVX1	Trento	8079
UDPHVX	Udine	8148
VAXTS	Trieste	9021
VAXLNL	National Lab. in Legnaro	9017
VAXFPD	Padova	9025
VAXPV	Pavia	9030
VAXGE	Genova	9019
VAXPR	Parma	8119
VAXFE	Ferrara	9031
VAXPI	Pisa	9020
VAXFI	Firenze	9015
VAXBA	Bari	9028
VAXCA	Cagliari	9026
VAXROM	Roma	6xxx
VAXPG	Perugia	9002
VAXGS	National la. Gran Sasso	9153
VAXNA	Napoli	9018
VAXFCT	Catania	9104
VAXLNS	National Lab. Sud	9027
VAXSAN	Sanita'(roma)	9003
VAXBO	Bologna	5xxx
VAXTOV	Roma II	9056

(VAXLNF   National Lab. Frascati DTE address 222262043xxxx)

IN2P3:The DTE address is 2080691101XXXX where XXX is defined as follows:

Host		Subaddress
CDFVAX	COLLEGE DE FRANCE	042
CLRVAX	CLERMONT – FERRAND	072
FRCPN11	CC_IN2P3	1841
LALSVX	LAL	023
LALVAX	LAL	022
LAPPVX	LAPP – ANNECY	092
LPNVAX	LPNHE	062
LYOVAX	IPN – LYON	102
MARVAX	MARSEILLE	132
POLY52	POLYTECHNIQUE	032

JANET: the DTE address is 0000XXXXXXXXXXXX

JANET hosts and services are normally addressed using the names defined in the NRS (Name Registration Service). Theses names are defined in the RAL PAD (CERN Index class RAL or 23).

LAPP: the DTE address is 208069110109X where X is defined as follows:

Host		Subaddress
LAPPVX	LAPP–ANNECY	2

L3NET: The DTE address is 311021300219XXX where XXX is defined as follows:

Host (or Switch Name)	Subaddress
CALTECH	99
MITLNS (MIT)	98
HUHEPL (Harvard)	97
NORHEP (Northeastern)	96
CMUHEP (C.M.U.)	95
JHUPHEP(Johns Hopkins)	94
MICH (Michigan)	93
PRINHEP(Princeton)	92
X.25 Switch at MIT	89
X.25 Switch at Caltech	88
X.25 Switch at Michigan	87
X.25 Switch at LBL	86
LBL terminal switch	84
LBL–Praxis	841
Merit Network (Terminal access)	83
CITNET network (Terminal access)	81

SACLAY:The DTE address is 2080911101XXXX where XXXX is defined as follows:

Host		Subaddress
DPHVX2	VAX–8700	2535
VM	IBM–3090–200	2541

UNIGE: The DTE address is 22846821613XX where XX is defined as follows:

Host		Subaddress
VAX_UNI2A	Computer Center/Uni 2	10
VAX_SC2A	Sciences 2	20
VAX_CMU	Centre Medical Uni.	30
VAX_OBS	Observatory	50

APPENDIX D

ACCESS FROM CERN TO AN EXTERNAL HOST USING XXX INDEX CLASS.

As has already been announced this service, which runs on old and unreliable hardware, will be phased out when a suitable replacement is found. This is foreseen for early in 1989.

Connection

1. Use a terminal connected to INDEX.

2. Establish connection to INDEX (PACX 1 or 2)

   Prompt : WELCOME TO PACX n n:1,2 enter class

3.
   Type : XXX < CR > (3 times character 'X'
   Prompt : class start and carriage return)

   Type slowly 3-4 dots ('.'), followed by ' < CR > ' (autobaud and autoparity)
   You are connected to the PAD.

4.
   Prompt : CERN EXTASE PADn:n — PORT:m n:1/2/3,
   SERVICE: m:02/03/04 COM

   You are automatically connected to the MULTIGATE.

   Prompt : WELCOME TO CERN X25 MULTIGATE (CERN-MG) DESTINATION?

5. Specify the address of the Remote Computer i.e. the DTE number. Use key DEL or RUBOUT — not BS — to delete a typed character.

Format:
[R]E.[0]n — — —n[,c — — —c] < CR >

where

[] indicates: contents is optional
R reverse charging (not possible for international calls on
public Packed-Switched Networks)
E External Packed Switched Network where E has following values:
P Public i.e. TELEPAC
J JANET (emergency alt. to INDEX class 23)
S Saclay
L L3NET

0 0 is prefix that must preceed an international number.

n — — —n 1-14 digits, the DTE address of the Remote Computer on the
External Packet — Switched Network
For calls within Switzerland, you may
— either use the international format: 0 followed by 228

(the Swiss TELEPAC prefix) followed by the 8 national digits
— or use the national format (8 national digits)
For international calls take national DTE number (appended by the subaddress   of the host where necessary), prefix it with 4 digit DNIC (data Network Identifier Code) — see Appendix A) — taking care not to prefix twice.
N.B. in France the 1 which preceeds a national call must be
   omitted, (the first two digits correspond to the department code)

c — — — c   1-12 characters, the Call User Data Field

If you access the Public Packet-Switched Network (e.g. P.023421920100515   <CR>   for PSS-HOSTES in Britain) you will receive:

Prompt: GIVE BUDGET CODE AND PASSWORD:
Type : bb ppp < CR <   bb budget code   ppp password

Budget code and password are not echoed to the terminal.

Prompt: CERN-MG: REMAINING BUDGET IS ????? SF

If the call is successful

Prompt: CERN-MG: CALL SENT CERN-MG: CALL CONNECTED

You are connected to the Remote Computer.
Follow the logon procedure for the Remote Computer. **If things go wrong !**

If the error message "CALL CLEARED BY EXTER.NET:BAD OR NOT OBTAINABLE NUMBER."
check the DTE number with the remote system manager and that there is no subaddress to be appended.

Less explicit error messages, generated by the PAD :

ERR 240/1/2	Link between PAD and CERN X.25 Switch down.
	Call operator (4927).
ERR 253	Attempt to disconnect without connection.
ERR	Error in typed PAD command.
CLR ERR 237	Network congested. All input buffers used-up.
	Try again
CLR DER	Remote Computer not connected to network. Try again later
	or contact person responsible for this computer.
CLR DTE	— Disconnected by Remote Computer.
	— Connection not accepted by Remote Computer.
CLR NC	Problem within the External Packet-Switched Networks.
	Try again.
CLR OCC	Undefined address or Remote Computer not (yet) reachable
	from the Swiss Public Packet-Switched Network TELEPAC. **Disconnection**

1. Perform logout procedure on Remote Computer.
   If this causes a disconnection, you will usually receive:

   Prompt: CERN-MG: CALL CLEARED BY THE REMOTE SITE
                    CERN-MG: COST OF THE CALL: ?????.

2. If the logout does not entail the disconnection (no message CLR DTE):

Type :   CTRL-P
Prompt: SERVICE:
Type :   CLR < CR >
Prompt: CLR CONF

In this case you will unfortunately receive no call cost information on the cost of the call.

Example.

    WELCOME TO PACX 1
enter class XXX < CR >
class start
.... < CR >
CERN EXTASE PAD:1 — PORT:02
SERVICE:
COM
WELCOME TO CERN X25 MULTIGATE (CERN-MG)
DESTINATION? P.022846810002,ECHO < CR >
GIVE BUDGET CODE AND PASSWORD: CE CER < CR >   **invisible**
CERN-MG: REMAINING BUDGET is 00489 SF
CERN-MG: CALL SENT
CERN-MG: CALL CONNECTED

        .
        .
        .

CERN-MG: CALL CLEARED BY THE REMOTE SITE **Disconnection**
CERN-MG: COST OF THE CALL: 00005.60 SF
CLR DTE **Query the remaining budget.**

    Prompt: WELCOME TO CERN X25 MULTIGATE(CERN-MG)
                   DESTINATION: BUDGET
                   GIVE BUDGET CODE AND PASSWORD: bb ppp
                   CERN-MG: REMAINING BUDGET is 00489 SF